

## REMARKS

The requisite fee for a five-month extension of time, the requisite fee for filing a Request for Continued Examination and any other fees that may be due in connection with the filing of this paper or with this application should be charged to Deposit Account No. 02-1818. If a Petition for Extension of Time is needed, this paper is to be considered such Petition. A supplemental Information Disclosure Statement has been filed under separate cover.

Claims 10-21 are pending. Claim 24 is cancelled without prejudice or disclaimer. Claim 10 is amended to recite that the chimeric sesquiterpene synthase polypeptide includes a ratio-determinant domain and also that it catalyzes production of a product produced in the absence of the second domain or ratio-determinant domain. Basis for the amendments can be found throughout the specification. Particular basis can be found, for example, at paragraphs [00009] and [00053] and Figure 5. Paragraph [0009] recites that the “the second domain of the second, heterologous isoprenoid synthase also determines the ratio of the isoprenoid reaction products of the chimeric isoprenoid synthase,” and paragraph [00053] recites that the domains can be “interrupted” by a “ratio determinant” domain. Hence the application includes embodiments in which the ratio determinant is part of the second domain or interrupts the two domains.

### **THE REJECTION UNDER 35 U.S.C. § 112, FIRST PARAGRAPH – WRITTEN DESCRIPTION (New matter)**

Claim 10-21 and 24 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement because the claims allegedly contain subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed subject matter. The Examiner states that the application does not exemplify production of new products not “produced by a chimeric sesquiterpene synthase that is not produced in the absence of one of the two domains.” Reconsideration of the grounds for this rejection is respectfully requested in view of the amendments herein and the following remarks.

Not all embodiments within the scope of a claim are required to be exemplified. Nevertheless, claim 10 is amended, as requested by the Examiner, to recite that the chimeric isoprenoid sesquiterpene synthase polypeptide encoded by the DNA

... catalyzes the production of at least one isoprenoid sesquiterpene synthase reaction product that is not produced in the absence of the second isoprenoid synthase polypeptide and another product that is produced in the absence of the second domain ...

Thus, the claim requires that the chimeric enzyme catalyzes the production of at least two products, each produced by one of the domains. Such amendment addresses the issue raised by the Examiner, as basis for such recitation occurs in the specification, including the claims a filed. Such claim does not exclude the possibility that other products are produced. Claim 24, which specifically recites that a new product is produced is cancelled without prejudice or disclaimer.

**THE REJECTION UNDER 35 U.S.C. § 112, FIRST PARAGRAPH – WRITTEN DESCRIPTION (Possession)**

Claims 10-21 and 24 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement, because the specification allegedly:

teaches that a ratio determining domain is required for the activity of the chimeric polypeptide as claimed. Amending Claim 10 to recite wherein the two product specific domains of the chimeric sesquiterpene synthase are interrupted by a product ratio determining [*sic*]domain would obviate those portions of the rejection under 112 1st written description drawn to the lack of a structure function relationship.

Nowhere in the specification does it teach that a ratio-determinant domain is **required** to be present. The specification describes that such domain can be present, but there is no evidence of record that establishes that it is required or that it is a separate domain. All that is required is that the chimeric enzyme include at least two domains from different synthases. One of skill in the art readily could combine domains and screen for enzymes that produce at least two products (or that produce a new product not catalyzed by either enzyme). As shown in the specification, the enzymes comprise domains that each have a severable activity, and that the domains can be recombined and still maintain the activity. By combining different domains, different products can be produced. Hence there is no basis to conclude that a ratio determinant domain is absolutely required nor that enzymes that catalyze production of new products or different products cannot be generated. Nevertheless, in the interest in advancing this application to allowance, the claim is amended as suggested by the Examiner, thereby obviating not only this rejection, but all outstanding rejections.

**THE REJECTION UNDER 35 U.S.C. § 112, FIRST PARAGRAPH – Enablement**

Claims 10-21 and 24 are rejected under 35 U.S.C. 112, first paragraph, because the specification:

*while being enabling for a nucleic acid molecule encoding a for DNA encoding a chimeric isoprenoid sesquiterpene synthase polypeptide, wherein said chimeric isoprenoid synthase polypeptide comprises a first sesquiterpene synthase domain joined to a second different sesquiterpene synthase domain, interrupted by a ratio determining domain; such that the chimeric isoprenoid sesquiterpene synthase polypeptide encoded by the DNA catalyzes the production of at least one isoprenoid*

Applicant : Chappell *et al.*  
Serial No. : 10/717,500  
Filed : November 21, 2003

Attorney Docket No.: 3800066.00086/205E  
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*reaction product that is not produced in the absence of the second isoprenoid synthase polypeptide and another product that is produced in the absence of the second domain; and vectors thereof, and plant cells and plants transformed therewith, does not reasonably provide enablement for DNA encoding a chimeric isoprenoid sesquiterpene synthase polypeptide, wherein said chimeric isoprenoid synthase polypeptide comprises a first isoprenoid synthase domain joined to a second different isoprenoid synthase domain such that the chimeric isoprenoid sesquiterpene synthase polypeptide encoded by the DNA catalyzes: (1) the production of at least one isoprenoid reaction product that is not produced in the absence of either of the first and the second isoprenoid synthase polypeptide domains; or the production of multiple sesquiterpene products from a chimeric sesquiterpene synthase absent a ratio determining domain.*

As discussed in previous responses, Applicant disagrees with the Examiner. Nevertheless, in the interest in advancing claims to certain embodiments to issue, the claims are amended to recite that the embodiments that the Examiner deems to be enabled (in italics above). In addition, as discussed above, the claims include embodiments in which the second domain includes the ratio determinant domain (see, *e.g.*, paragraph [00009] reproduced above. Therefore, the rejection is obviated.

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In view of the above remarks and amendment, reconsideration and withdrawal of the rejections and allowance of the application respectfully are requested.

Respectfully submitted,

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